DI20

ULTRA-DI

User's Manual

ENGLISH

Version 1.0 October 2002



BEHRINGER

www.behringer.com

Welcome to the BEHRINGER family!

Thank you for the confidence you have placed in us by purchasing the ULTRA-DI DI20 professional active 2-channel DI-box/splitter.

On stage as well as in studios, it is sometimes advantageous to connect certain sound sources directly to the mixing console. Since many instruments (keyboards, for example) don't have balanced outputs they require a DI-box. Sometimes, even guitars can't be directly connected to mixing consoles because their impedance is too high.

By using a DI-box, you can **directly** tap into a high-impedance, unbalanced signal—for example, a signal between a guitar and a guitar amplifier. From this point, you can feed this signal directly to a mixing console.

There are active and passive DI-boxes. A passive DI-box is more affordable, but its performance is dependent on the impedance of the device to which it is connected. When the impedance on the mixing console's end changes, so does the impedance at the input of the DI-box. Such DI-boxes only function properly when the connected impedance values are strictly specified (high at the input, low at the output). Active DI-boxes are not affected by these impedance considerations. The input impedance of the DI20 is extremely high, and it absolutely does not influence the signal flow through the DI-box. The output impedance is balanced and always very low, whereby the signal is far less prone to being affected by noise.

☞ **To prevent damaging your loudspeakers, first connect the DI-box and then hook up the respective channel. The same goes for alternating between battery and phantom power operating modes.**

1. CONTROLS

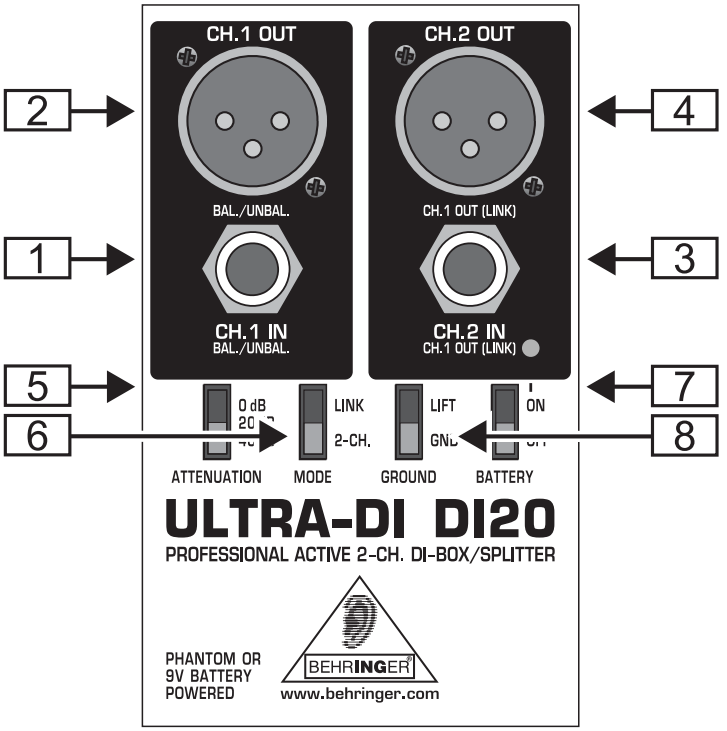


Fig. 1.1: Controls of the DI20

1 *CH. 1 IN* input is used to connect unbalanced as well as balanced signal sources to channel 1.

2 *CH.1 OUT* is the balanced output at mic level for channel 1.

3 *CH.2 IN* input is used to connect unbalanced as well as balanced signal sources to channel 2. In LINK mode (see 6) this connector functions as output and sends the signal directly from channel 1.

4 *CH. 2 OUT* is the balanced output at mic level for channel 2. In *Link Mode* (see 6) this connector sends the signal directly from channel 1.

5 The *ATTENUATION* dampening switch considerably increases the useful operating range of the DI20 from low signal levels of a high-impendence microphone or a guitar, all the way to the speaker connectors of a guitar amplifier (solid state). You can select between 20 and 40 dB worth of attenuation.

☞ **You should only use the ATTENUATION switch when your DI20 rather than the mixing console preamp begins distorting. Otherwise refrain from using this function to avoid excessive dampening.**

6 The *MODE* switch lets you select the operating modes of the DI20. In the *2-CH* mode, two independent signals can be connected to channels 1 and 2 respectively. In *LINK* mode the DI-box functions as a splitter: One signal can be fed to the channel 1 input and split into two balanced signals (at outputs 1 and 2) and an unbalanced signal at CH.1 OUT. The unbalanced signal can, for example, be connected to an additional amplifier.

☞ **When connecting a tube amplifier to the input of the DI20, please keep in mind that an appropriate load resistance (e. g. a loudspeaker) must be connected to the CH.1 OUT (LINK MODE) connector.**

7 The *BATTERY* switch activates the battery powered mode. Set the battery operating mode to OFF when your DI20 is connected to phantom power. While setting it to OFF, brief whistling noise may occur. This is completely normal and needs no further attention. However, you should not change the battery switch when you have an amp connected. For battery operation, you'll only need a commercial 9 V battery of the 6LR61 type.

8 By using the *GROUND* switch, you can interrupt (LIFT) the grounding between the input and output. Depending on how other devices connected to your DI-box are grounded, ground loops can be eliminated.

☞ **Never connect pin 2 or pin 3 to pin 1! Never remove the screen protection on pin 1. Otherwise, you won't be able to run the DI20 on phantom power (for example, phantom power from a mixing console).**

BATTERY COMPARTMENT

To access the battery compartment, loosen the screw on the rear.

2. CONNECTION OPTIONS

2.1 Connecting a (bass) guitar

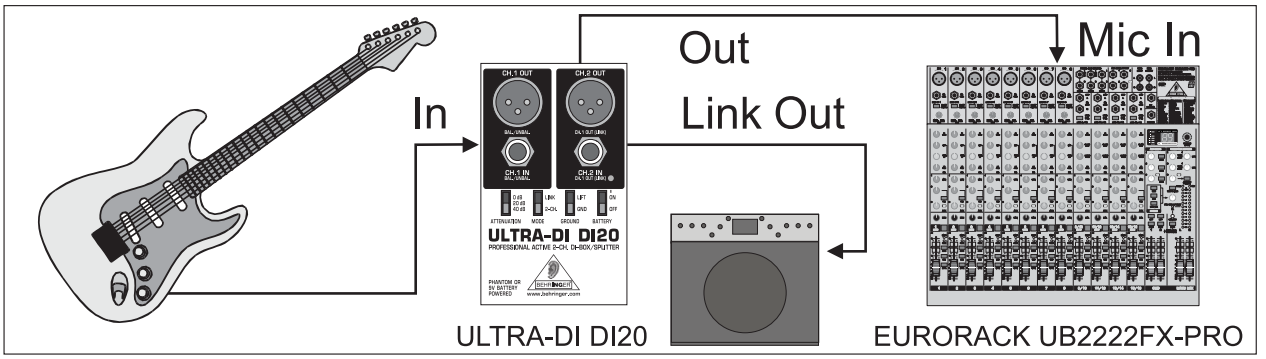


Fig. 2.1: Guitar ➟ DI-box ➟ guitar amp/mixing console

This illustration shows the standard application of a DI-box. The signal is fed unbalanced to a guitar amp and balanced to a mixing console (LINK mode). This application has advantages when used with bass guitars, because very few microphones are able to pick up low frequencies at high levels.

2.2 Converting output signals of a keyboard, DJ-mixer, etc.

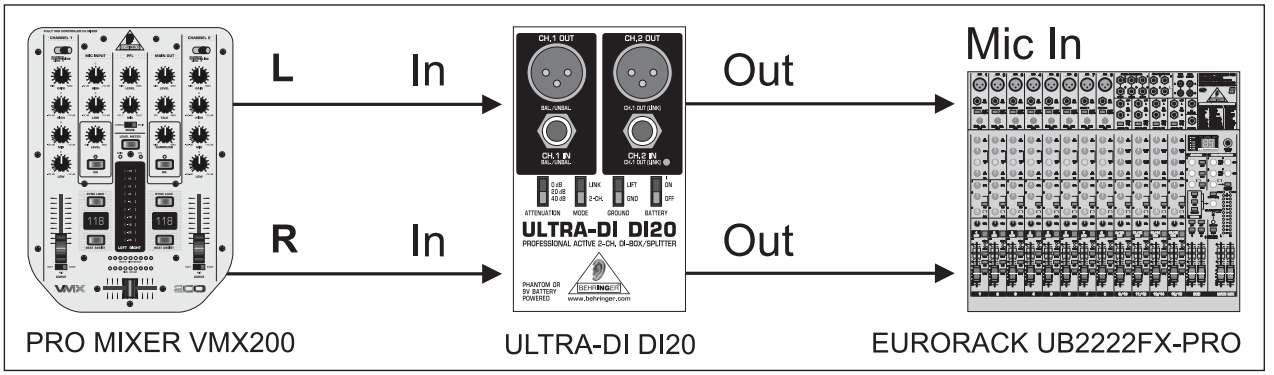


Fig. 2.2: DJ-mixer ➟ DI-box ➟ mixing console

This configuration is recommended when using a DJ-mixer or another signal source, which sends an unbalanced line level signal. In addition, if you need a separate monitor signal, the line level signal can be sent to another amplifier.

3. AUDIO CONNECTIONS

The BEHRINGER ULTRA-DI DI20 features electronically servo-balanced standard inputs and outputs. The circuit design is equipped with automatic hum suppression for balanced signals and operates problem-free even at high levels. Externally induced mains hum is thus efficiently suppressed. The servo function automatically detects unbalanced pin connections and changes the nominal level internally by 6 dB so that there is no difference in level between input and output signals.

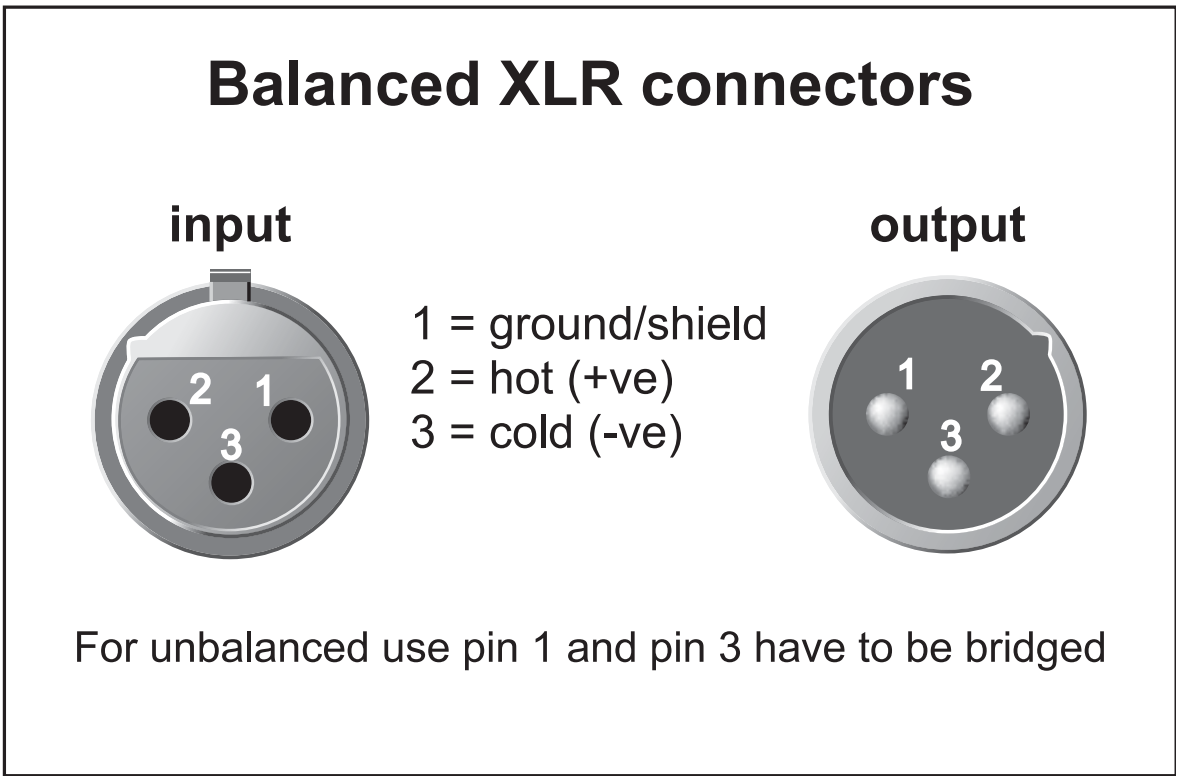


Fig. 3.1: XLR connectors

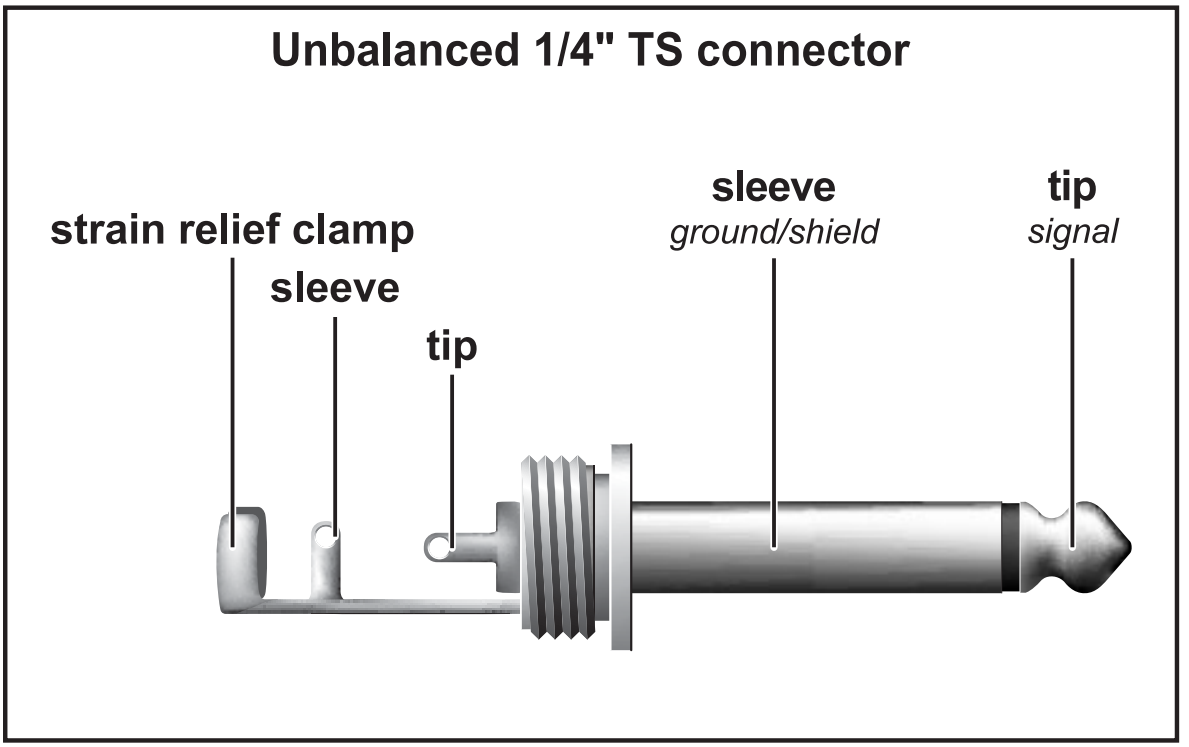


Fig. 3.2: 1/4" TS connector

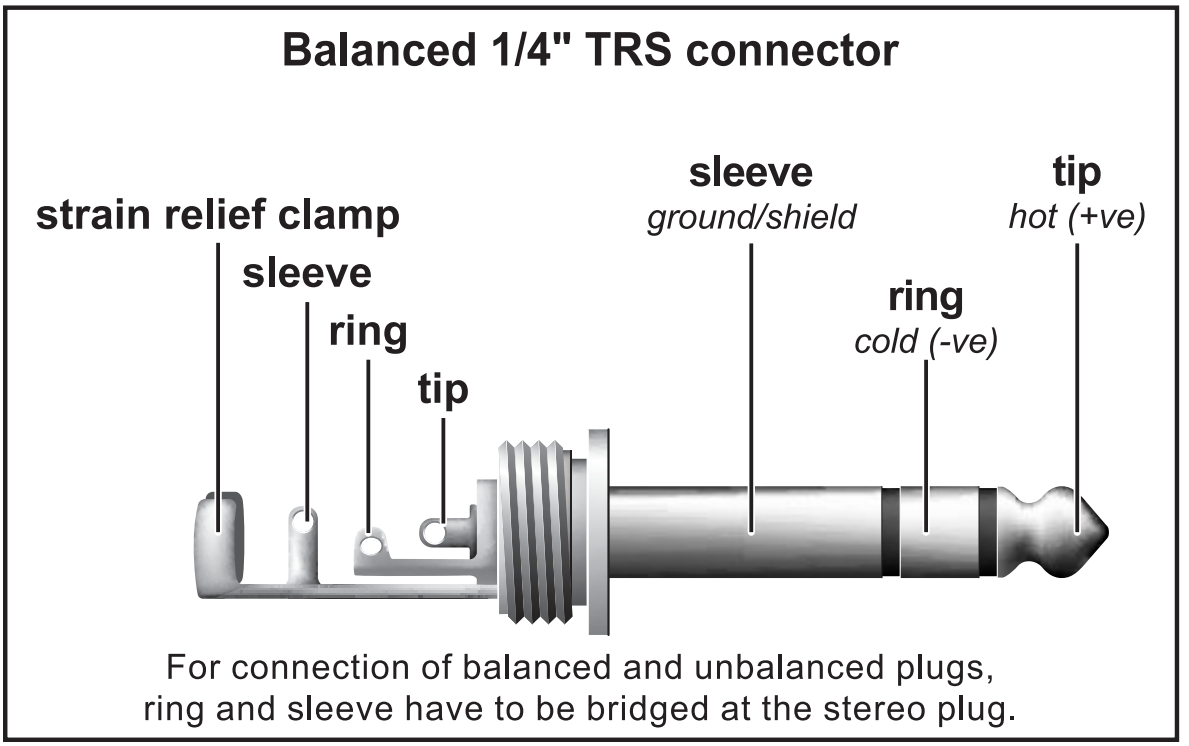


Fig. 3.3: 1/4" TRS connector

4. MULTILINGUAL DOCUMENTATION

☞ **The following versions of this user's manual can be downloaded free of charge at http://www.behringer.com: German, French, Spanish, Italian, Dutch, Finnish, Swedish, Danish, Portuguese and Greek.**

5. SPECIFICATIONS

Frequency response	10 Hz to 70 kHz (-3 dB)
Noise	100 dBu
Distortion	< 0.014% (1 kHz, 0 dBu in)
Input resistance	> 250 kΩ
Connection impedance	> 600 Ω
Input	1/4" mono jack
Output	XLR balanced
Max. input level	+12/+32/+52 dBu
Phantom power	18 V DC to 48 V DC
Battery power	9 V 6LR91
Dimensions	6" (150 mm) x 5" (130 mm) x 2 3/8" (60 mm)
Weight	approx. 650 g

BEHRINGER is constantly striving to maintain the highest professional standards. As a result of these efforts, modifications may be made from time to time to existing products without prior notice. Specifications and appearance may therefore differ from those listed or shown.

6. WARRANTY

§ 1 WARRANTY CARD/ONLINE REGISTRATION

To be protected by the extended warranty, the buyer must complete and return the enclosed warranty card within 14 days of the date of purchase to BEHRINGER Spezielle Studiotechnik GmbH, in accordance with the conditions stipulated in § 3. Failure to return the card in due time (date as per postmark) will void any extended warranty claims. Based on the conditions herein, the buyer may also choose to use the online registration option via the Internet (www.behringer.com or www.behringer.de).

§ 2 WARRANTY

1. BEHRINGER (BEHRINGER Spezielle Studiotechnik GmbH including all BEHRINGER subsidiaries listed on the enclosed page, except BEHRINGER Japan) warrants the mechanical and electronic components of this product to be free of defects in material and workmanship for a period of one (1) year* from the original date of purchase, in accordance with the warranty regulations described below. If the product shows any defects within the specified warranty period that are not excluded from this warranty as described under § 3 and 4, BEHRINGER shall, at its discretion, either replace or repair the product using suitable new or reconditioned parts. In the case that other parts are used which constitute an improvement, BEHRINGER may, at its discretion, charge the customer for the additional cost of these parts.

2. If the warranty claim proves to be justified, the product will be returned to the user freight prepaid.

3. Warranty claims other than those indicated above are expressly excluded.

§ 3 RETURN AUTHORIZATION NUMBER

1. To obtain warranty service, the buyer (or his authorized dealer) must call BEHRINGER (see enclosed list) during normal business hours **BEFORE** returning the product. All inquiries must be accompanied by a description of the problem. BEHRINGER will then issue a return authorization number.

2. Subsequently, the product must be returned in its original shipping carton, together with the return authorization number to the address indicated by BEHRINGER.

3. Shipments without freight prepaid will not be accepted.

§ 4 WARRANTY REGULATIONS

1. Warranty services will be furnished only if the product is accompanied by a copy of the original retail dealer's invoice. Any product deemed eligible for repair or replacement by BEHRINGER under the terms of this warranty will be repaired or replaced within 30 days of receipt of the product at BEHRINGER.

2. If the product needs to be modified or adapted in order to comply with applicable technical or safety standards on a national or local level, in any country which is not the country for which the product was originally developed and manufactured, this modification/adaptation shall not be considered a defect in materials or workmanship. The warranty does not cover any such modification/adaptation, irrespective of whether it was carried out properly or not. Under the terms of this warranty, BEHRINGER shall not be held responsible for any cost resulting from such a modification/adaptation.

3. Free inspections and maintenance/repair work are expressly excluded from this warranty, in particular, if caused by improper handling of the product by the user. This also applies to defects caused by normal wear and tear, in particular, of faders, potentiometers, keys/buttons and similar parts.

4. Damages/defects caused by the following conditions are not covered by this warranty:

- ▲ improper handling, neglect or failure to operate the unit in compliance with the instructions given in BEHRINGER user or service manuals.
- ▲ connection or operation of the unit in any way that does not comply with the technical or safety regulations applicable in the country where the product is used.
- ▲ damages/defects caused by force majeure or any other condition that is beyond the control of BEHRINGER.

5. Any repair or opening of the unit carried out by unauthorized personnel (user included) will void the warranty.

6. If an inspection of the product by BEHRINGER shows that the defect in question is not covered by the warranty, the inspection costs are payable by the customer.

7. Products which do not meet the terms of this warranty will be repaired exclusively at the buyer's expense. BEHRINGER will inform the buyer of any such circumstance. If the buyer fails to submit a written repair order within 6 weeks after notification, BEHRINGER will return the unit C.O.D. with a separate invoice for freight and packing. Such costs will also be invoiced separately when the buyer has sent in a written repair order.

§ 5 WARRANTY TRANSFERABILITY

This warranty is extended exclusively to the original buyer (customer of retail dealer) and is not transferable to anyone who may subsequently purchase this product. No other person (retail dealer, etc.) shall be entitled to give any warranty promise on behalf of BEHRINGER.

§ 6 CLAIM FOR DAMAGES

Failure of BEHRINGER to provide proper warranty service shall not entitle the buyer to claim (consequential) damages. In no event shall the liability of BEHRINGER exceed the invoiced value of the product.

§ 7 OTHER WARRANTY RIGHTS AND NATIONAL LAW

1. This warranty does not exclude or limit the buyer's statutory rights provided by national law, in particular, any such rights against the seller that arise from a legally effective purchase contract.

2. The warranty regulations mentioned herein are applicable unless they constitute an infringement of national warranty law.

* Customers in the European Union please contact BEHRINGER Germany Support for further details.

The information contained in this manual is subject to change without notice. No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording of any kind, for any purpose, without the express written permission of BEHRINGER Spezielle Studiotechnik GmbH.
BEHRINGER, EURORACK and ULTRA-DI are registered trademarks. ALL RIGHTS RESERVED.
© 2002 BEHRINGER Spezielle Studiotechnik GmbH.
BEHRINGER Spezielle Studiotechnik GmbH, Hanns-Martin-Schleyer-Str. 36-38, 47877 Willich-Münchheide II, Germany
Tel. +49 (0) 21 54 / 92 06-0, Fax +49 (0) 21 54 / 92 06-30